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Project Title:
Watts Bar Nuclear Plant (WBN), Unit 1 American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code Request for Alternative IST RR 9

Proposed Alternative Number or Identifier:
IST-RR-9

Request Type:
10 CFR 50.55a(z)(2)

Inservice Inspection (ISI) or Inservice Testing (IST)
Inservice Testing (IST)

Requested Completion Date:
October 01, 2021

Brief Description of Proposed Alternative
In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.55a, 'Codes and Standards,' paragraphs (z)(2), Tennessee Valley Authority (TVA) requests Nuclear Regulatory Commission (NRC) approval of alternative request IST-RR-9 for Watts Bar Nuclear Plant (WBN), Unit 1. This alternative request proposes a one-time extension of the test frequency for the WBN Unit 1 Test Plan Group 6 Relief Valves 1-RFV-62-1221, 1-RFV-62-1222, and 1-RFV-63-835.The 2004 Edition through 2006 Addenda of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code, Mandatory Appendix I, Subsection I-1350(a), “Test Frequency, Classes 2 and 3 Pressure Relief Valves 10-Year Test Interval,” mandates, in part, that a minimum of 20% of the valves from each valve group shall be tested within any 48-month interval. Additionally, Code Case OMN-20, “Inservice Test Frequency,” permits a six-month grace period for test frequencies that are greater than or equal to two years. Because of a change to the schedule for the upcoming WBN Unit 1 Cycle 17 fall 2021 refueling outage (U1R17), TVA is requesting an approximate six-week extension for the test frequency of these relief valves from the current late date of October 12, 2021, until no later than the end of U1R17, currently scheduled for November 27, 2021.Compliance with Mandatory Appendix I, Subsection I-1350(a) would cause a hardship or unusual difficulty without a compensating increase in the level of quality or safety due to the need to perform a mid-cycle shutdown in order to perform the required testing. Therefore, TVA is submitting this alternative request in accordance with 10 CFR 50.55a(z)(2).

Proposed Duration of Alternative (in terms of ISI/IST Program Interval with Start and End Dates):
October 12, 2021, until no later than the end of U1R17, currently scheduled for November 27,

2021.

Applicable ASME Code Requirements
ASME OM Code, Division 1, Mandatory Appendix I, 'lnservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants', Section I-1350(a), “Test Frequency, Classes 2 and 3 Pressure Relief Valves 10-Year Test Interval.”

Applicable American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV Code), or ASME Operation and Maintenance of Nuclear Power Plants (OM Code), Edition and Addenda
ASME OM Code 2004 Edition through 2006 Addenda

Current ISI or IST Program Interval Number and Start/End Dates
Third 10 year IST Interval
October 19, 2016, to October 18, 2026

Applicable ASME Code Components and/or System Description

Site/ Unit	Component ID	Component Description	Valve Category	Code Class	Test Plan Group
WBN Unit 1	1-RFV-62-1221	Centrifugal Charging Pump (CCP) 1A-A Suction Relief	C-Active	2	6
WBN Unit 1	1-RFV-62-1222	CCP 1B-B Suction Relief	C-Active	2	6
WBN Unit 1	1-RFV-63-835	Residual Heat Removal (RHR) Heat Exchanger 1B-B Outlet to Safety Injection (SI) Pump Suction Relief	C-Active	2	6

Reason for Request
The Test Plan Group 6 (hereafter referred to as Group 6) consists of 13 valves including the specific valves listed in Item 17. In accordance with Mandatory Appendix I, Subsection I 1350(a), a minimum of 20% of the valves in Group 6 are tested within any 48-month interval. These valves are tested during refueling outages as the tailpipe discharge piping is routed through a primary containment penetration to the pressurizer relief tank with no other containment isolation valves. Removal of the valves for testing or replacement creates a breach in containment which, during power operation, would require entry into WBN Unit 1 Technical Specification (TS) 3.6.1, 'Containment,' Condition A, for an inoperable containment and requiring a one-hour completion time or the unit must shutdown. The subject valves for this request are Crosby, JRAK style relief valves. During the

WBN Unit 1 Cycle 16 refueling outage (U1R16) in spring 2020, TVA determined that these relief valves were not scheduled to be tested and the omission was entered into the TVA corrective action program. Because the scope of U1R16 was limited due to the Covid-19 pandemic, TVA rescheduled the OM Code required testing of these relief valves to U1R17 (fall 2021) because the valves would still remain in frequency by invoking the six-month grace

period allowed by NRC-approved Code Case OMN-20, “Inservice Test Frequency.”

WBN U1R17 was originally scheduled to begin September 18, 2021, and end October 18, 2021, which would have allowed the valve testing to occur within the 48-month interval plus the six months grace extension of Code Case OMN-20. WBN U1R17 was also originally scheduled to be followed by the Sequoyah Nuclear Plant (SQN) U2R24; however, TVA changed the sequence of the WBN U1R17 and SQN U2R24 outages for outage sequencing alignment. Consequently, the current WBN U1R17 outage is now scheduled to commence after the SQN outage on October 29, 2021, and end November 27, 2021. Therefore, the relief valves listed in Item 17 of this alternative request will exceed the allowable 54-month window by approximately six weeks (i.e., from the late date of October 12, 2021, as described below, to no later than November 27, 2021).

Group 6 was last sampled during U1R14 (spring 2017) when five valves were tested [four successful and one failure (1-RFV-63-511)]. None of the valves listed in Item 17 were included in that sample. The last three test dates during U1R14 were April 8, 2017, (one valve, 1-RFV-63-28) and April 9, 2017, (two valves, 1-RFV-63-577 and 1-RFV-72-509). Utilizing the April 8, 2017, date and applying 54 months results in a late date of October 12, 2021, for the next sample testing of the Group 6 valves. This date was calculated using the definition in WBN Unit 1 TS 5.7.2.11, “Inservice Testing Program,” and OMN-20 for annually (366 days) (multiplied by four years) and semiannually (184 days) for a total of 1,648 days.
The individual test history of the relief valves associated with this request is:
• 1-RFV-62-1221 was last tested in U1R11 (fall 2012). The valve was removed from the field, set-pressure tested acceptably on September 26, 2012, and was replaced with a pre-tested spare valve, which was set-pressure tested on July 23, 2012.
• 1-RFV-62-1222 was last tested in U1R11. The valve was removed from the field, set-pressure tested acceptably on September 18, 2012, and was reinstalled in the same location.
• 1-RFV-63-835 was last tested in U1R11. The valve was removed from the field and set-pressure tested acceptably on October 6, 2012, and was replaced with a pre-tested spare valve, which was set-pressure tested on October 5, 2012.

Therefore, the above valves will not exceed the ten-year test-to-test interval.

WBN typically performs Class 2 and 3 relief valve testing by utilizing Mandatory Appendix I, Section I-1350(b), “Replacement With Pretested Valves,” and tracks relief valve testing by both installed plant location and valve serial number. This approach allows tracking of individual valve performance regardless of its various installed locations over the life of the plant.

A review of the WBN Unit 1, Group 6 test history since the initial WBN Unit 1 startup in 1995 documents a total of 38 as-found set point tests have been performed with a total of three test failures as described below.

• 1-RFV-72-508, Containment Spray Pump 1A-A Suction Relief - In U1R9 (fall 2009), the valve exhibited excessive as-found seat leakage and was unable to be set-pressure tested.
• 1-RFV-72-509, Containment Spray Pump 1B-B Suction Relief - In U1R11 (fall 2012), the as-found set pressure was seven percent (%) low [93 pounds per square inch gauge (psig) versus 100 psig].
• 1-RFV-63-511, Safety Injection Pump 1A-A Relief - In U1R14 (spring 2017), the as-found set pressure was approximately 25% high (274 psig versus 220 psig).

For each of the set-pressure failures identified above, two additional valves were selected and tested with no additional set-pressure failures.

Full Description of Proposed Alternative

TVA is requesting a one-time extension to the testing frequency of ASME OM Code, Division 1, Mandatory Appendix I, Section I-1350(a) and the six-month grace period allowed by OMN-20 in order to perform the testing of the subject valves during WBN U1R17, which is scheduled to start on October 29, 2021.

The relief valves that are the subject of this alternative request will still remain within the ten-year test-to-test interval. Therefore, increasing the test frequency by no greater than six weeks will not adversely affect plant safety and will have no quantifiable increase in plant risk.

Description of Basis for Use

This alternative request will eliminate the need to shut down the plant in order to perform the relief valve testing, which would result in an undue hardship due to the risks associated with plant transients with no compensating increase in the level of quality and safety. This alternative request will only apply to Mandatory Appendix I, Section I-1350(a), requirements as they relate to the 20% sample of valves within Group 6 and is a one-time only use.

Describe Hardship or Unusual Difficulty

See Item 20 above.

Any Additional Information (submission attachments listed here)

None

Precedents

This alternative request is similar to the following alternative requests, which have been approved by the NRC.• NRC letter to TVA, "Watts Bar Nuclear Plant, Unit 1 - Safety Evaluation of Relief Request PV 05 for the Third 10-Year Interval of the Inservice Testing Program (TAC No. ME4205)," dated July 29, 2010 (ML102090015), which granted a one time six month extension to the test interval for two pressure relief valves in the essential raw cooling water system and component cooling system.• NRC letter to NextEra Energy Point Beach, LLC, "Point Beach Nuclear Plant Unit 1 - Relief Request VR 01; Alternatives to Certain Inservice Testing Requirements of the American Society of Mechanical Engineers Code of Operation and Maintenance of Nuclear Power Plants (TAC No. MF6225)," dated June 24, 2015 (ML15161A535), which granted a one-time seven-month extension for the 1B reactor coolant pump component cooling water return header relief valve.• Energy Harbor letter to NRC, L-21-045, "10 CFR 50.55a Request Number VR 4, Revision 0, Exercising Test Frequency, VR 6, Revision 0, Position Verification Testing, and VR 8, Revision 0, Valve Test Frequency Extension," dated February 8, 2021 (ML21039A409), requested for the Perry Nuclear Power Plant, a one-time approximate two-year extension of exercising test frequency, position verification testing, and valve test frequency for 35 valves due to the coronavirus disease 2019 (COVID 19). NRC granted verbal approval of this alternative request on March 4, 2021 (ML21063A192, ML21063A195, and ML21063A198).

References

None